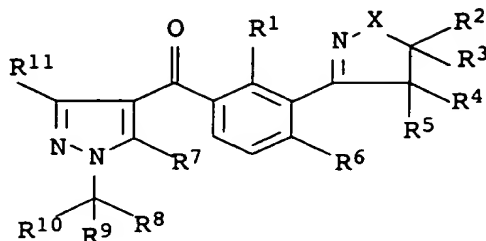


We claim:

1. A 3-(heterocyclyl)-substituted benzoylpyrazole of the formula
I



I

where:

X is O, NH or N(C₁-C₆-alkyl);

R¹ is C₁-C₆-alkyl;

R², R³, R⁴, R⁵ are hydrogen, C₁-C₄-alkyl or C₁-C₄-haloalkyl;

R⁶ is halogen, nitro, C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio, C₁-C₄-haloalkylthio, C₁-C₄-alkylsulfonyl or C₁-C₄-haloalkylsulfonyl;

R⁷ is hydroxyl, C₁-C₆-alkoxy, C₃-C₆-alkenyloxy, C₁-C₆-alkylsulfonyloxy, C₁-C₆-alkylcarbonyloxy, C₁-C₄-(alkylthio)carbonyloxy, phenylsulfonyloxy or phenylcarbonyloxy, where the phenyl radical of the two last-mentioned substituents may be partially or fully halogenated and/or may carry one to three of the following groups:
nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R⁸, R⁹ are C₁-C₄-alkyl;

R¹⁰ is hydrogen or C₁-C₄-alkyl;
where the number of the carbon atoms of the radicals R⁸, R⁹ and R¹⁰ together is at most 7,

R¹¹ is hydrogen or C₁-C₄-alkyl;

and its agriculturally useful salts.

2. A 3-(heterocyclyl)-substituted benzoylpyrazole of the formula I as claimed in claim 1 where

X is O;

R¹ is C₁-C₄-alkyl;

R⁶ is C₁-C₄-alkylthio or C₁-C₄-alkylsulfonyl.

3. A 3-(heterocyclyl)-substituted benzoylpyrazole of the formula I as claimed in claim 1 where

X is O;

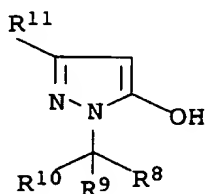
R¹ is C₁-C₄-alkyl;

R⁶ is halogen, nitro, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy.

4. A 3-(heterocyclyl)-substituted benzoylpyrazole of the formula I as claimed in claim 1 where

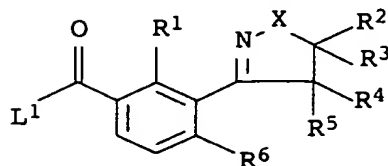
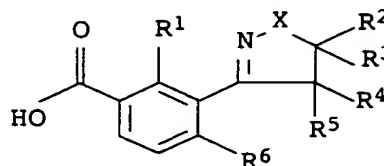
X is N(C₁-C₆-alkyl).

5. A process for preparing 3-(heterocyclyl)-substituted benzoylpyrazoles of the formula I where R⁷ = hydroxyl as claimed in claim 1, which comprises acylating a pyrazole of the formula II



II

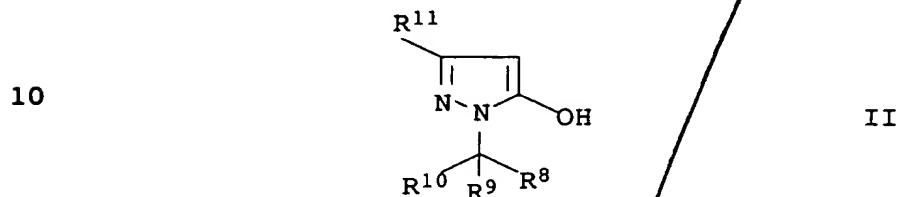
with an activated benzoic acid III α or a benzoic acid III β ,

III α III β

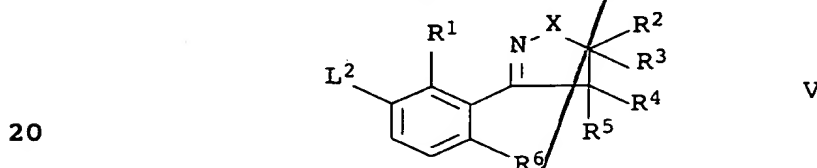
where the variables X, R¹ to R⁶ and R⁸ to R¹¹ are as defined in claim 1 and L¹ is a nucleophilically replaceable leaving group and rearranging the acylation product, in the presence

or absence of a catalyst, to give the compounds of the formula I where $R^7 = \text{hydroxyl}$.

6. A process for preparing 3-(heterocyclyl)-substituted benzoylpyrazoles of the formula I where $R^7 = \text{OH}$ as claimed in claim 1, which comprises reacting a pyrazole of the formula II

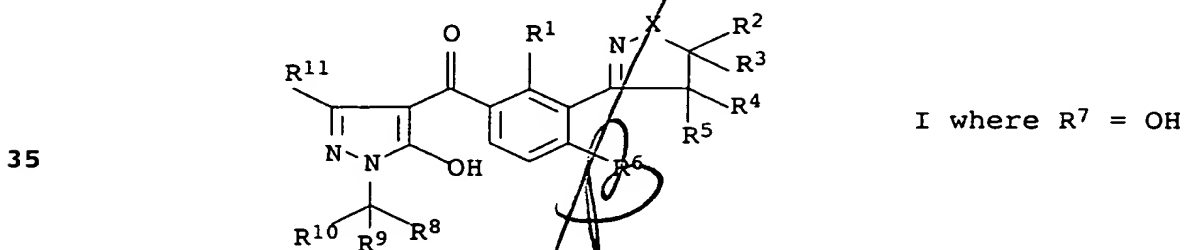


- 15 in which the variables R^8 to R^{11} are as defined in claim 1, or an alkali metal salt thereof, with a 3-(heterocyclyl)benzene derivative of the formula V



- 25 where the variables X and R^1 to R^6 are as defined in claim 1 and L^2 is a leaving group in the presence of carbon monoxide, a catalyst and a base.

- 30 7. A process for preparing 3-(heterocyclyl)-substituted benzoylpyrazoles of the formula I where $R^7 \neq \text{hydroxyl}$ as claimed in claim 1, which comprises reacting a 3-(heterocyclyl)-substituted benzoylpyrazole I where $R^7 = \text{hydroxyl}$



- 40 with a compound of the formula VI



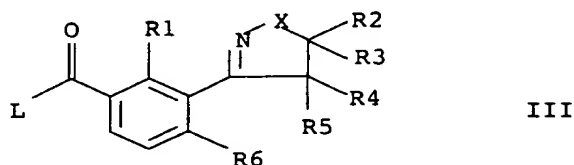
where

- L^3 is a nucleophilically replaceable leaving group;

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R^{7a} is C₁-C₆-alkyl, C₃-C₆-alkenyl, C₁-C₆-alkylsulfonyl, C₁-C₆-alkylcarbonyl, C₁-C₄-(alkylthio)carbonyloxy, phenylsulfonyl or phenylcarbonyl, where the phenyl radical of the two last-mentioned substituents may be partially or fully halogenated and/or may carry one to three of the following groups: nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy.

8. A benzoic acid ester of the formula III

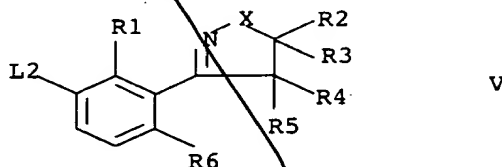


where the variables X, R¹ and R³ to R⁶ are as defined in claim 1 and

R² is C₁-C₄-haloalkyl; and

L is hydroxyl or a radical that can be removed by hydrolysis.

9. A 3-(heterocyclyl)benzene derivative of the formula V



where the variables X, R¹ and R³ to R⁶ are as defined in claim 1 and

R² is C₁-C₄-haloalkyl; and

L² is a nucleophilically displaceable leaving group.

10. A composition, comprising a herbicidally effective amount of at least one 3-(heterocyclyl)-substituted benzoylpyrazole of the formula I or an agriculturally useful salt of I as

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claimed in any of claims 1 to 4 and auxiliaries which are customarily used for formulating crop protection agents.

11. A process for preparing compositions as claimed in claim 8,
5 which comprises mixing a herbicidally effective amount of at least one 3-(heterocyclyl)-substituted benzoylpyrazole of the formula I or an agriculturally useful salt of I as claimed in any of claims 1 to 4 and auxiliaries which are customarily used for formulating crop protection agents.

- 10
12. A method for controlling undesirable vegetation,
characterized in that a herbicidally effective amount of at least one 3-(heterocyclyl)-substituted benzoylpyrazole of the formula I or an agriculturally useful salt of I as claimed in
15 any of claims 1 to 4 is allowed to act on the plants, their habitat and/or on seed.

13. The use of the 3-(heterocyclyl)-substituted benzoylpyrazoles of the formula I and/or their agriculturally useful salts as
20 claimed in any of claims 1 to 4 as herbicides.

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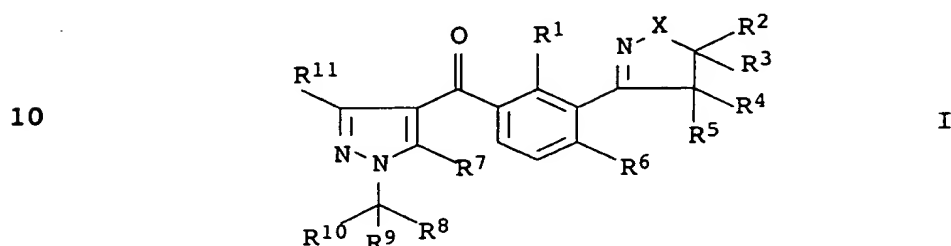
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C1

3-(Heterocyclyl)-substituted benzoylpyrazoles

Abstract

5

3-(Heterocyclyl)-substituted benzoylpyrazoles of the formula I



15

where:

X is O, NH or N-alkyl;

20 R¹ is alkyl;R², R³, R⁴, R⁵ are hydrogen, alkyl or haloalkyl;

25 R⁶ is halogen, nitro, haloalkyl, alkoxy, haloalkoxy, alkylthio, haloalkylthio, alkylsulfonyl or haloalkylsulfonyl;

30 R⁷ is hydroxyl, alkoxy, alkenyloxy, alkylsulfonyloxy, alkylcarbonyloxy, alkylthiocarbonyloxy, phenylsulfonyloxy or phenylcarbonyloxy, where the phenyl radical may be substituted;

R⁸, R⁹ are alkyl;35 R¹⁰ is hydrogen or alkyl;R¹¹ is hydrogen or alkyl;

and their agriculturally useful salts,

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intermediates and processes for their preparation, and the use of these compounds or of compositions comprising them for controlling undesirable plants are described.

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